

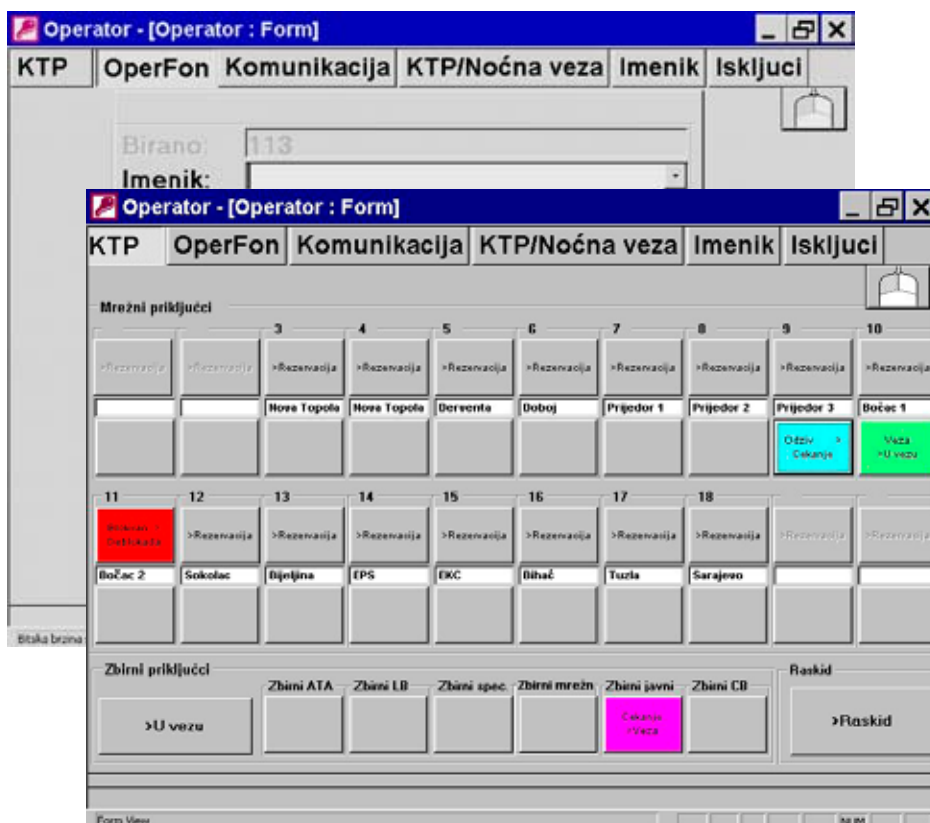
ETCE-D

DIGITAL TELEPHONE EXCHANGE

The ETCE-D is a special digital telephone exchange dedicated to electric power communications network and it:

- offers all advantages of modern technology,
- keeps all good characteristics of analog exchanges and
- is compatible with existing network.

ETCE-D has the characteristics of local, transit, PABX and manual exchange.



The ETCE-D is fourth type (first digital) of exchanges developed in IRITEL and dedicated to telephone network (TN) of electric power industry (EPI).

ETCE-D is developed according to Technical requirements of TN EPI and according to ITU-T recommendations for digital exchanges. It consists of the following parts: switching network, line circuits, network interfaces, peripheral processor units, central processor unit, operator console and set for emergency operation.

Switching network is non-blocking digital network for switching channels with rate 64kb/s.

Line circuits provide all BORSCHT functions.

There are two types of digital network interfaces. One is standard A interface and the other is codirectional 64 kb/s interface according to ITU-T Rec. G.703.1.

There is one analog interface dedicated to operation in period of digitalization.

The peripheral processor unit controls a number of lines and/or network interfaces.

The central processor unit controls all peripheral processor units and operator set.

The main trunks may be monitored and managed by the operator set.

The functions of PABX are provided by the operator set.

The set for emergency operation makes possible to establish some most important connections during exchange failure.

Main characteristics of ETCE-D are high availability, adaptable numbering system, fast and adaptable network signalling system, fast operator set, set for emergency operation, remote monitoring.

Users and network interfaces

Two standard versions are available: 60 (V1) and 120 (V2) users + network interfaces. Greater versions may be delivered according to the needs and contract.

The user sets are:

- standard telephone set,
- telephone set with local battery (LB),
- telephone set without dialling (CB),
- cordless telephone set (DECT)

The network interfaces are:

- analog for power line carriers,
- analog for public telephone network,
- digital 2 Mb/s (A), G.703. n x 64 kb/s,
- digital 64 kb/s, G.703.1.

The number of users to number of inter-

faces ratio may be chosen according to the need.

The numbering scheme

The numbering scheme may be chosen according to the need. Abbreviated dialling is possible. The sending of dialled or changed called numbers is possible. All dialling possibilities for TN of EPI are provided.

Signalling

User signalling is standardized according to technical requirements of TN of EPI (decadic, DTMF). All parameters of dialling (duration of pulses and pauses etc.) are changeable.

Network signalling system may be one of signalling systems used in TN of EPI.

Comandor Control

ETCE-D is supplied by software that make difference between meshed types of transit connections (analog to digital, digital to analog) and pure types of transit connections (analog to analog, digital to digital). This software (called *comandor control*) controls the use of compressors and expanders in transit connections.

Loss and efficiency of the exchange ETCE-D

The switching network is non-blocking. The number of outgoing, incoming and transit connections is not limited.

Through-connection time is cca 30 ms.

The incoming response time is shorter than 100 ms.

Alerting sending delay time is shorter than 100 ms.

All channels are available for both-way operation. The collision resolution procedure is provided. The number of DTMF receivers is equal to the number of users.

The number of R2 senders and receivers is equal to the number of digital network interfaces.

The attenuation loss, crosstalk, symmetry, noise etc are according to technical requirements of EPI.

The operator set

The operator set is very effective and fast touch screen controlled by high quality PC. It is connected to the exchange by a wire or optical 9.6 kb/s link.

Longest distance between the operator set and the ETCE-D is 100 m (wire connection) or 500 m (optical connection). Duration of message (that may contain one calling figure) sent from operator set to ETCE-D (and vice versa) is cca 10 ms.

Operator has possibility to dial in four ways: decadic and DTMF by the operator's telephone set and by touch screen "figure by figure" and "an bloc" by the touch screen directory.

The operator's monitor shows the state of important channels and connection.

All operators' possibilities as: answering, dialling, channel reservation, turning-off the faulty channel etc. are enabled by the touch screen monitor.

In the absence of operator the "night service" may be active.

In the case of operator set failure the turning to the "night service" is done automatically.

Operation of the ETCE-D cannot be influenced by faulty operation of operator set.

Remote monitoring

Every interface may be point of monitoring. In that way, using alternate routing the exchange may be monitored by more than one direction.

The operation protection

The protection against operator's failure is performed by the "night service" set.

The protection against the "catastrophic" failures is done by the set for emergency operation (SEO).

The protection against the power supply failures is performed by the power supply for SEO.

The protection against illegal change of exchange parameters is done by passwords.

Overvoltage protection is performed by the circuit design, fast and robust elements.

Power supply

Standard power supply is from mains 220 V, 50 Hz or 48 Vdc. Power consumption is less than 100 W (V1) and less than 200 W (V2).

Dimensions

Dimensions of exchange are 160x60x50 cm.